

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 21I013112W07	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/IT 98/ 00378	International filing date (day/month/year) 23/12/1998	(Earliest) Priority Date (day/month/year)
Applicant INDUSTRIE ILPEA S.P.A. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

2



as suggested by the applicant.



None of the figures.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

THIS PAGE BLANK (USPTO)

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00378

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B60R13/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	EP 0 924 121 A (INDUSTRIE ILPEA S.P.A.) 23 June 1999 (1999-06-23) the whole document ---	1
T	EP 0 914 990 A (INDUSTRIE ILPEA S.P.A.) 12 May 1999 (1999-05-12) the whole document ---	1
A	EP 0 337 884 A (RENAULT) 18 October 1989 (1989-10-18) figures 1-4 ---	1
A	DE 197 18 531 C (MERCEDES-BENZ AG) 25 June 1998 (1998-06-25) figures 1-9 --- -/--	1

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

24 August 1999

Date of mailing of the international search report

30/08/1999

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kusardy, R

THIS PAGE BLANK (USPTO)

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00378

C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 42 17 513 A (PEBRA INC.) 17 December 1992 (1992-12-17) figures 1-12 ---	1
A	DE 295 02 439 U (EUWE EUGEN WEXLER GMBH) 30 March 1995 (1995-03-30) figures 1-4 ---	1
A	EP 0 461 516 A (REHAU AG + CO.) 18 December 1991 (1991-12-18) figures 1-6 -----	1

THIS PAGE BLANK (USPTO)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 98/00378

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 924121	A	23-06-1999	EP 0914990 A	12-05-1999
			CA 2241607 A	25-12-1998
EP 914990	A	12-05-1999	CA 2241607 A	25-12-1998
			EP 0924121 A	23-06-1999
EP 337884	A	18-10-1989	FR 2629878 A	13-10-1989
DE 19718531	C	25-06-1998	FR 2762818 A	06-11-1998
			GB 2329157 A	17-03-1999
			JP 10315880 A	02-12-1998
DE 4217513	A	17-12-1992	CA 2069188 A	30-11-1992
			JP 4358941 A	11-12-1992
			MX 9202598 A	01-08-1993
			US 5353571 A	11-10-1994
DE 29502439	U	30-03-1995	DE 19543819 A	22-08-1996
EP 461516	A	18-12-1991	DE 9006548 U	16-08-1990
			CA 2043895 A	10-12-1991

THIS PAGE BLANK (USPTO)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

To:

BUGNION S.P.A.
Attn. SUTTO, L.
Viale Lancetti, 17
I-20158 MILANO
ITALY

Date of mailing
(day/month/year)

30/08/1999

Applicant's or agent's file reference

21I013112W07

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/IT 98/ 00378

International filing date

(day/month/year)

23/12/1998

Applicant

INDUSTRIE ILPEA S.P.A. et al.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Josephus Wannee

THIS PAGE BLANK (USPTO)

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

THIS PAGE BLANK (USPTO)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

THIS PAGE BLANK (USPTO)

PCT

**NOTIFICATION OF THE RECORDING
 OF A CHANGE**

(PCT Rule 92bis.1 and
 Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

GHIONI, Carlo, Raoul
 c/o Bugnion S.p.A.
 Viale Lancetti, 17
 I-20158 Milano
 ITALIE

Date of mailing (day/month/year) 29 June 2001 (29.06.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 211013112WO7	
International application No. PCT/IT98/00378	International filing date (day/month/year) 23 December 1998 (23.12.98)

1. The following indications appeared on record concerning:	
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor <input checked="" type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address SUTTO, Luca Bugnion S.p.A. Viale Lancetti, 19 I-20158 Milano Italy	State of Nationality
	State of Residence
	Telephone No. 02 693031
	Facsimile No. 02 69303501
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input checked="" type="checkbox"/> the person <input type="checkbox"/> the name <input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence	
Name and Address GHIONI, Carlo, Raoul c/o Bugnion S.p.A. Viale Lancetti, 17 I-20158 Milano Italy	State of Nationality
	State of Residence
	Telephone No. 02 693031
	Facsimile No. 02 69303501
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Anman QIU
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

THIS PAGE BLANK (USPTO)

09/868740

Copy for the Elected Office (EO/US)

PCT/IT98/00378

PCT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

GHIONI, Carlo, Raoul
c/o Bugnion S.p.A.
Viale Lancetti, 17
I-20158 Milano
ITALIE

RECEIVED

SEP 19 2001

TO 3600 MAIL ROOM

Date of mailing (day/month/year) 20 July 2001 (20.07.01)	
Applicant's or agent's file reference 211013112WO7	IMPORTANT NOTIFICATION
International application No. PCT/IT98/00378	International filing date (day/month/year) 23 December 1998 (23.12.98)

1. The following indications appeared on record concerning: <input checked="" type="checkbox"/> the applicant <input type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative		
Name and Address INDUSTRIE ILPEA S.P.A. Viale dell'Industria, 37 I-21023 Malgesso Italy (Fiscal Code: 11054860157)	State of Nationality IT	State of Residence IT
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: <input checked="" type="checkbox"/> the person <input type="checkbox"/> the name <input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence		
Name and Address INDUSTRIE ILPEA S.P.A. Viale dell'Industria, 37 I-21023 Malgesso Italy (Fiscal Code: 02536400126)	State of Nationality IT	State of Residence IT
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: The person indicated in Box No. 2 is a new company which has been established by a merger between the company indicated in Box No. 1 and another company.		
4. A copy of this notification has been sent to: <input checked="" type="checkbox"/> the receiving Office <input type="checkbox"/> the designated Offices concerned <input type="checkbox"/> the International Searching Authority <input checked="" type="checkbox"/> the elected Offices concerned <input type="checkbox"/> the International Preliminary Examining Authority <input type="checkbox"/> other:		

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Elisabeth KÖNIG Telephone No.: (41-22) 338.83.38
---	---

THIS PAGE BLANK (USPTO)

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing: 06 July 2000 (06.07.00)	
International application No.: PCT/IT98/00378	Applicant's or agent's file reference: 211013112W07
International filing date: 23 December 1998 (23.12.98)	Priority date:
Applicant: CITTADINI, Paolo et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
26 January 2000 (26.01.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

THIS PAGE BLANK (USPTO)

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

SUTTO, L.
BUGNION S.P.A.
Viale Lancetti, 17
I-20158 Milano
ITALIE

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing (day/month/year)	09.02.2001
-------------------------------------	------------

Applicant's or agent's file reference

/.

IMPORTANT NOTIFICATION

International application No. PCT/IT98/00378	International filing date (day/month/year) 23/12/1998	Priority date (day/month/year) 23/12/1998
---	--	--

Applicant

INDUSTRIE ILPEA S.P.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Malmerdahl, A

Tel. +49 89 2399-2928



THIS PAGE BLANK (USPTO)

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference ./.	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IT98/00378	International filing date (day/month/year) 23/12/1998	Priority date (day/month/year) 23/12/1998
International Patent Classification (IPC) or national classification and IPC B60R13/04		
Applicant INDUSTRIE ILPEA S.P.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 26/01/2000	Date of completion of this report 09.02.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Lotz, K-D Telephone No. +49 89 2399 2323



THIS PAGE BLANK (USPTO)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IT98/00378

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).*):

Description, pages:

2-14 as originally filed

1bis as received on 27/11/2000 with letter of 24/11/2000

Claims, No.:

1-16 as received on 27/11/2000 with letter of 24/11/2000

Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

THIS PAGE BLANK (USPTO)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IT98/00378

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-16
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-16
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-16
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

THIS PAGE BLANK (USPTO)

Reference is made in this report to the following documents:

D1: DE-A-42 17 513

D2: EP-A-0 461 516

Re Item V

1. Inventive step of independent claim 1

- a) The document **D1** (see particularly figures 4 , 5) is regarded as being the **closest prior art** to the subject-matter of claim 1 and discloses (the references in parentheses applying to this document):

A moulding element for motor vehicle bodies comprising:

- a main section bar (19) of elongated conformation;
- attachment means (36) operatively associated to the main section bar (19) and destined to engage a corresponding securing area of a body of a motor vehicle, said attachment means including:
- a continuous support element engaged to the main section bar, said support element presenting a pre-set number of attachment seats (60) located at a pre-set mutual distance and
- a longitudinal seat obtained on the main section bar for receiving said continuous support element, the longitudinal seat presenting in cross-section a longitudinal opening to allow access to said attachment seats and undercuts acting in opposition on a corresponding bearing portion of the continuous support element.

- b) The **difference** between the subject matter of independent claim 1 and D1 are the undercuts of the main section bar, capable of preventing extraction of the attachment means through said longitudinal opening.

Therefore the subject matter of independent **claim 1** is new (Article 33(2) PCT).

- c) **The objective problem** to be solved by the invention is therefore to provide a more resistant fastening possibility for said moulding element.
- d) **The solution** for the problem appears not to be obvious as prior art shows either (as in D2) a moulding element made of one part containing also a pre-set number of attachment seats for engagement with corresponding projections carried by its related securing area or on the other hand (as in D1) a moulding element consisting of a continuous support element with a pre-set number of attachment

THIS PAGE BLANK (USPTO)

seats to be engaged to the related securing area by the use of "stud" like fixation means and a main section bar to be engaged to this support element in a "clip" like manner after the fixation of said support element. This solution clearly allows a later removal/extraction of the main section bar of said support element. None of the two documents mentioned give a hint in a straight forward sense to change the "clip" like fixation allowing removal of the main section bar into a fixation geometry with undercuts of the main section bar which is capable of preventing its extraction from the continuous support element of the attachment means.

The newly filed **claim 1** can therefore be **considered to involve an inventive step** as required by Article 33(3) PCT.

2. Inventive step of independent claim 16

A method of manufacturing the above mentioned moulding element with the related phases as claimed in claim 16 appears consequently not obvious too.

Claim 16 can therefore be **considered to involve an inventive step** as required by Article 33(3) PCT.

3. The dependent claims 2 - 15 disclose further useful characteristics of the invention which would therefore also fulfill the requirements of PCT.

Re Item VIII

4. The amendments filed with the letter dated 24 Nov 2000 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendment concerned is the following:

- disclaimer in claim 1 quoting that the main section bar and said continuous support element are not made of resilient material.

This conclusion is obtained as the given indication for used materials within the description (e.g. page 11, line 20 - page 12, line 15) can not provide without any doubt that all the materials used for the moulding element are exclusively non resilient materials.

5. The introduced disclaimer in new dependent claim 2 appears not clear with respect to the used wording "...no means are associated to the continuous support element ..." (Article 6 PCT).

THIS PAGE BLANK (USPTO)

MOULDING ELEMENT FOR MOTOR VEHICLE BODIES

AND METHOD FOR THE REALISATION THEREOF

The present invention relates to a moulding element for motor vehicle bodies and a method for the realisation thereof.

5 In particular, such a moulding element is destined to be applied as a finish and/or protection to car body parts (e.g.: doors, fenders, edge areas of the lower perimeter of the body, windshields, etcetera).

Moulding elements of known types for the uses cited above usually comprise a band, typically made of plastic material, provided with proper attachment means for
10 engagement to some part of the body.

It is known from DE 4217513 a moulding element composed by two parts: a frame, attached to the body, via adhesive tapes and studs projecting from the frame; an outer cover snap-fitted on the frame.

15 In is also known from EP 0461576 a single piece moulding element, provided on its inner surface with slots properly shaped to engage projections emerging from the body.

Some known types of moulding elements provide for the plastic band to be fastened by means of adhesives (e.g.: bi-adhesive tapes interposed between the body and one side of the moulding element).

20 The drawbacks of this kind of fastening are clear: precariousness of the connection, unreliability over time, extreme sensitivity to atmospheric agents and to dynamic stresses.

A second known type of general architecture for moulding elements provides for the presence of a longitudinal seat destined to house, by snap-on engagement, a
25 plurality of coupling elements which are positioned in the longitudinal seat in

THIS PAGE BLANK (USPTO)

Claims

1. Moulding element for motor vehicle bodies comprising:

- a main section bar (2) of elongated conformation;

- attachment means (6) operatively associated to the main section bar (2) and destined
5 to engage a corresponding securing area (5a) of a body (5) of a motor vehicle, said attachment means (6) including:

- a continuous support element (7) engaged to the main section bar (2), said support
element (7) presenting a pre-set number of attachment seats (11) located at a pre-set
mutual distance suitable for engagement with the corresponding projections carried by
10 said securing area (5a); and

- a longitudinal seat (8) obtained on the main section bar (2) for receiving said
continuous support element (7), the longitudinal seat (8) presenting in cross-section a
longitudinal opening (10) to allow access to said attachment seats (11) and undercuts
(12) acting in opposition on a corresponding bearing portion (13) of the continuous
15 support element (7);

characterized in that said undercuts (12) of the main section bar (2) are capable of
preventing extraction of the attachment means (6) through the longitudinal opening,
said main section bar (2) and said continuous support element (7) not being made in
resilient material.

2. Moulding element according to claim 1, characterized in that:

said longitudinal seat (8) is substantially corresponding to said continuous support
element (7), the continuous support element (7) being inserted in the corresponding
longitudinal seat (8); and in that

25 in a first operative condition of the moulding element (1), where the continuous
support element (7) is separated from the body (5), the continuous support element (7)

THIS PAGE BLANK (USPTO)

is exclusively and directly engaged only to the main section bar (2) and, in a second operative condition of the moulding element (1) where the moulding element (1) is fully assembled and mounted on the body (5), the continuous support element is directly and exclusively attached to the main section bar (2) and to the projections (9) carried by said securing area (5a); and in that no means are associated to the continuous support element (7) for directly attaching the same to the body (5).

3. Moulding element according to claim 1, characterized in that said longitudinal seat (8) presents, in cross section, a longitudinal opening (10) to allow an access to the attachment seats (11) of the continuous element (7), and at least an undercut (12), set to act in opposition on a corresponding bearing portion (13) of the continuous support element (7) to prevent the extraction of the attachment means (6) through said longitudinal opening.

4. Moulding element according to claim 3, characterized in that said longitudinal seat (8) presents, in correspondence with at least one end, an insertion opening (8a) to receive said continuous support element.

5. Moulding element according to claim 1, characterized in that it comprises axial locking means (14) operatively interposed between said main section bar (2) and said attachment means (6).

6. Moulding element according to claim 1, characterized in that it comprises a finish coating (3) associated to an outer side (2a) of the main section bar, said finish coating (3) being preferably associated to the main section bar by means of injection

THIS PAGE BLANK (USPTO)

body, the fastening projections (9) of the body comprising a head and a connecting stem between the head and the body, said head presenting a radial dimension greater than the radial dimension of the stem.

5 12. Moulding element according to claim 11, characterized in that, in correspondence with the blocking area (11b), the peripheral lip presents a projecting portion (15) defining at least an undercut (16) set to act in opposition on a corresponding arrest portion of the head of the projection (9) to prevent separating motions between the moulding element (1) and the body (5) of the vehicle.

10 13. Moulding element according to any one of the claims from 1 to 12, characterized in that the continuous support element (7) presents a pre-set number of attachment seats (11) each delimited at least in one side of the continuous element (7) destined to face the body, by a peripheral lip defining an open line connected to the subsequent
15 and to the preceding seat.

20 14. Moulding element according to claim 13, characterized in that the peripheral lip delimiting the attachment seat (11) defines at least an area (11a) for the insertion of the fastening projections (9) and at least an area (11b) for blocking the fastening projections (9) in an axial direction of motion of the moulding element away from the body, the fastening projections (9) of the body comprising a head and a stem connecting the head and the body, said head presenting a radial dimension greater than the radial dimension of the stem.

25 15. Moulding element according to claims 13 and 14, characterized in that, in correspondence with the blocking area (11b), the peripheral lip presents a projecting

THIS PAGE BLANK (USPTO)

11 22 11 00

moulding.

7. Moulding element according to claim 1, characterized in that it comprises a flexible seal lip (4) extending longitudinally along substantially the entire development of the moulding element itself and presenting a base portion (4a) engaged on the main section bar.

8. Moulding element according to claim 1, characterized in that said main section bar comprises a stiffening metal core.

9. Moulding element according to claim 4, characterized in that the main section bar (2) presents a substantially "C" shaped cross section defining within its own interior the longitudinal seat (8), said seat comprising two undercuts (12), set to act in opposition on corresponding bearing portions (13) of the continuous support element (7) to prevent the extraction of the attachment means (6) through the longitudinal opening.

10. Moulding element according to any one of the previous claims, characterized in that the continuous support element (7) presents a pre-set number of attachment seats (11) delimited at least in one side of the continuous element (7) destined to face the body, by a peripheral lip defining a closed line.

11. Moulding element according to claim 10, characterized in that the peripheral lip delimiting the attachment seat (11) defines at least an area (11a) for the insertion of fastening projections (9) and at least an area (11b) for blocking the fastening projections (9) in an axial direction of motion of the moulding element away from the

THIS PAGE BLANK (USPTO)

portion (15) defining at least an undercut (16) set to act in opposition on a corresponding arresting portion of the head of the projection (9) to prevent separating motions between the moulding element (1) and the body (5) of the vehicle.

5 16. Method for the manufacturing of a moulding element and for assembling the same to a motor vehicle body, said moulding element being preferably of the type disclosed in anyone of the preceding claims, the method comprising the following phases:

- realizing the main section bar (2) of elongated conformation and provided with the longitudinal seat (8);

10 - realizing the continuous support element (7) presenting a pre-set number of attachment seats (11) positioned at a pre-set mutual distance;

- engaging the continuous support element (7) to the main section bar (2) prior to associating the moulding element (1) to the body (5) of a motor vehicle; and

15 - axially fastening the main section bar (2) and the support element (7) prior to associating the moulding element (1) to the body (5) of a motor vehicle, said engaging phase of the continuous support element (7) to the main section bar (2) being realized by sliding the continuous support element (7) through the longitudinal seat (8).

20

THIS PAGE BLANK (USPTO)

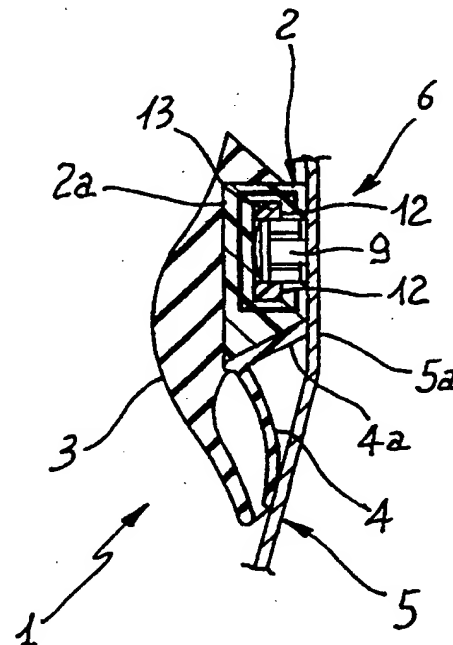
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B60R 13/04	A1	(11) International Publication Number: WO 00/38952 (43) International Publication Date: 6 July 2000 (06.07.00)
(21) International Application Number: PCT/IT98/00378 (22) International Filing Date: 23 December 1998 (23.12.98) (71) Applicant (for all designated States except US): INDUSTRIE ILPEA S.P.A. [IT/IT]; Viale dell'Industria, 37, I-21023 Malgesso (IT). (72) Inventors; and (75) Inventors/Applicants (for US only): CITTADINI, Paolo [IT/IT]; Via Campo dei Fiori, 1, I-21020 Luvinata (IT). FERRANTE, Pierpaolo [IT/IT]; Via Maggio, 20, I-21030 Cuvio (IT). LAUDWEIN, Ralf [DE/IT]; Via Marconi, 9, I-21020 Bardello (IT). (74) Agent: SUTTO, Luca; Bugnion S.p.A., Viale Lancetti, 19, I-20158 Milano (IT).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: MOULDING ELEMENT FOR MOTOR VEHICLE BODIES AND METHOD FOR THE REALISATION THEREOF

(57) Abstract

A moulding element for motor vehicle bodies has been realised wherein a main section bar (2) of elongated conformation is engaged to attachment projections (9) presented by a correspondent securing area (5a) of a body (5) of a motor vehicle. The engagement between main section bar (2) and body (5) occurs by means of the interposition of a continuous support element (7) presenting a pre-set number of seats (11) able to be engaged to a pre-set number of fastening projections (9) of the body.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

MOULDING ELEMENT FOR MOTOR VEHICLE BODIES
AND METHOD FOR THE REALISATION THEREOF

The present invention relates to a moulding element for motor vehicle bodies and a method for the realisation thereof.

5 In particular, the subject moulding element is destined to be applied as a finish and/or protection to motor vehicle bodies and in particular to parts thereof such as doors, fenders, edge areas of the lower perimeter of the body, or also to windshields, etcetera.

10 As is well known, moulding elements for the uses briefly described above traditionally comprise a band, typically made of plastic material, which is provided with appropriate attachment means for engagement to the part of the body whereto it is destined.

In particular, different types of moulding elements currently exist according to the different attachment systems used for fastening to the body.

15 A first known type of moulding elements provides for the plastic band to be fastened by means of adhesives and more specifically of bi-adhesive tapes interposed between the body and one side of the moulding element.

The drawbacks of this kind of fastening are evident: precariousness of the connection, unreliability over time, extreme sensitivity to atmospheric agents
20 and to dynamic stresses.

A second type of known realisation provides for the moulding element to present a longitudinal seat destined to house, by snap-on engagement, a plurality of coupling elements which are positioned in the longitudinal seat in

mutually equidistant positions.

More precisely, the moulding element comprises an elongated main body, obtainable by means of extrusion or moulding, wherein the longitudinal seat is defined. The latter, on the side of the moulding element destined to be oriented towards the body, presents an opening or slot wherefrom the coupling elements can partially emerge. More specifically, in correspondence with the opening or slots, millings or blankings are obtained at regular intervals in order to allow the insertion of each of the coupling elements and, at the same time, to define axial bearing surfaces wherein the coupling elements go and get locked by snapping.

Once the various coupling elements are appropriately fastened, they will each present at least a projection emerging in a direction substantially perpendicular to the longitudinal seat to engage corresponding slots obtained on the body of the motor vehicle.

This prior art realisation, though it is certainly effective from the point of view of fastening and operative reliability, has nonetheless also shown considerable drawbacks.

In particular the need to realise millings for the access of the engagement elements in correspondence with the longitudinal seat clearly entails an additional working phase which causes non negligible manufacturing costs. Moreover, since the main body whereon the milling is performed is typically made of material having good mechanical characteristics and, oftentimes, even of bi-material, milling operations are certainly not easy.

It should also be noted that the milling or blanking operations cause significant weakening in the structure constituting the moulding element thereby inevitably causing deformations and in particular undulations, certainly anti-aesthetic, which reduce the planarity and compliance with geometric tolerances of the outer surface of the moulding element itself. In fact, given the extreme rigidity of the section bar and the presence, in many cases, of metal cores, the milling work processes may entail such maintenance problems to the abrasion elements as to determine high machining costs and scrap levels.

Moreover, the residual presence of possible burrs can determine abrasions and scoring on the painted parts of the body.

In the attempt to solve the aforementioned drawbacks, a third type of moulding elements is currently widely used, wherein the attachment means comprise rivets or projections fastened, for instance by welding, to the body of a motor vehicle and then appropriately coated with plastic material in order to be engageable, by interference or by snapping on, in corresponding seats of the moulding element.

In greater detail, each rivet of the body is provided with its own plastic retaining element presenting a seat able to receive, by means of insertion in the vertical direction, the head of the rivet.

Each retaining element is also provided with guiding portions with horizontal development located on the same element in opposite positions.

Once each head of the rivets is engaged with the corresponding retaining

element, a "C" section bar is associated by sliding, which engages on the guiding portions and covers the retaining elements themselves. By means of terminal bodies the axial sliding movement between section bar and retaining elements is subsequently prevented.

5 This last realisation, although it does eliminate the burdensome problem of the milling operation, is also afflicted by some drawbacks.

In the first place it should be noted that it is not possible to manufacture a finished product ready to be assembled to the body of the motor vehicle.

10 This is because the assembly phases entail first associating all the retaining elements to the respective rivets.

Secondly, it is necessary to engage, by means of sliding, the extruded element to each of the retaining elements, and hence an additional phase wherein the section bar is axially locked is necessary.

15 This means that mounting each moulding element requires numerous successive phases and that prior to proceeding with assembly to the body, each moulding element must be finished in multiple separate pieces.

It should also be noted that the presence in the finished product of a plurality of discrete elements (retaining elements) physically separated from each other, coupled with the weakness of the section bar structure, due to the
20 presence of hollow lightening areas, contributes to render the final structure of the moulding element weaker and more easily deformable.

In this situation, the fundamental aim of the present invention is to make available a new embodiment of a moulding element for motor vehicle bodies

which, in addition to presenting high performance in terms of resistance and reliability over time of the fastening to the body, is also economical to manufacture and easy to assemble, without thereby entailing substantial increases in terms of materials consumption.

5 A further aim is to avoid the need for milling operations on the extruded section bar whilst allowing to realise such a moulding element as to be able to be associated to the body of a motor vehicle with simple operations also engaging each of the rivets emerging from the body of the motor vehicle to a corresponding seat with a single attachment operation.

10 Within the scope of said technical task, an aim is to provide motor vehicle manufacturers with an already pre-assembled moulding element, requiring only to be fastened to the motor vehicle.

Lastly, a further aim is to render the moulding element able to be fastened to the body in a more resistant and reliable manner.

15 These and other aims besides which shall be made clearer in the course of the following description are substantially attained by a moulding element as described in the accompanying claims.

Further features and advantages will become more readily apparent from the detailed description of a preferred, but not exclusive, embodiment of a
20 moulding element according to the invention.

Such description shall be made hereafter with reference to the accompanying drawings, provided purely by way of non-limiting indication.

-Figure 1 is an interrupted plan view relating to the body coupling side of a

moulding element according to the present invention;

- Figure 2 is a cross section according to trace II-II of Figure 1;

- Figure 3 is an interrupted top view of a continuous support element according to the invention;

5 - Figure 4 shows a longitudinal cross section according to the axis IV-IV of the continuous support element shown in Figure 3;

- Figure 5 is a cross section of the continuous support element according to the trace V-V of Figure 3;

10 - Figure 6 is a cross section of a continuous support element according to the trace VI-VI of Figure 3;

- Figure 7 shows an alternative embodiment of a continuous support element according to the present invention; and

- Figure 8 shows a cross section of the continuous support element of Figure 7 engaged to a projection emerging from the body of an automobile.

15 With reference to the accompanying figures and in particular to Figures 1 and 2, the number 1 indicates in its entirety a moulding element of motor vehicle bodies.

As mentioned above the moulding element 1 may be employed as an element for protecting, for surface and aesthetic finishing, for covering in various
20 areas of the body of a motor vehicle, for instance in correspondence with the lower edge of the body on the sides thereof, in correspondence with the front and rear fender, on the doors, on the windshield, etcetera.

The moulding element 1 comprises a main section bar possibly provided with

metal core presenting elongated conformation and obtainable for instance by means of extrusion or pultrusion or other processes.

The main section bar presents an outer side 2a whereto is associated a surface finish coating 3 which, needing to be rigidly coupled to the main body itself, can preferably be joined thereto by means of injection moulding techniques or in co-extrusion with the main section bar. Preferably, but not necessarily, the main section bar can also be provided with a flexible seal lip 4 extending substantially along the entire longitudinal development of the moulding element 1 and presenting a base portion 4a rigidly engaged to the main section bar 2. From a manufacturing point of view, the coupling between the main section bar 2 and the seal lip 4 can be obtained with various techniques, for instance by means of their co-extrusion effected continuously.

In order to engage the main section bar 2 and thus the moulding element 1 to a corresponding attachment area 5a provided with fastening projections 9 welded to the body 5 of the motor vehicle, attachment means 6 are provided, operatively associated to the main section bar itself in correspondence with an inner side 2b thereof, opposite to said outer side 2a.

In detail, the fastening projections 9 comprise a pre-set number of elements each provided with a head connected to the body 5 by means of a stem with smaller radial dimensions than those of the head, resembling the shape of a rivet.

Originally, the attachment means 6 comprise a continuous support element 7, extending substantially over the entire longitudinal development of the main

section bar 2 and fastened thereto preferably by means of insertion in a corresponding longitudinal seat 8 obtained on the inner side 2b of the main section bar itself.

5 Descending further in detail, it should be noted that the longitudinal seat 8 is defined by the main section bar which presents a substantially "C" shaped cross section. The seat is obtained on the main section bar 2 and it presents, in its cross section, a longitudinal opening 10, also substantially developing over the entire length of the moulding element, set to allow an access to the continuous element 7 when the latter is inserted.

10 Also in reference to the cross section, the longitudinal seat 8 presents at least an undercut 12 set to act in opposition against a corresponding bearing portion 13 of the continuous support element 7 to prevent its extraction through the longitudinal opening itself. It should be noted that, in the example shown, for reasons of symmetry, two undercuts 12 are preferably provided, co-operating
15 with respective bearing portions 13. In practice, both the continuous support element 7 and the longitudinal seat 8 present, at least for pre-set lengths, a greater transverse size than that of the longitudinal opening 10 so that the continuous support element 7 can be housed in its seat 8 without being extractable therefrom through the longitudinal opening 10.

20 Actually, to allow the attachment means 6 to be coupled to the main section bar 2 during the assembly phase, it is provided for the longitudinal seat 8 to present, in correspondence at least with one of its ends, an insertion opening 8a to receive the continuous support element 7 which can traverse the

insertion opening itself and can be made to slide in the seat 8 until reaching the desired axial positioning. Once the attachment means 6 are suitably positioned with respect to the main section bar 2 the continuous element is fastened axially by means of axial locking means 14 (Figure 1) operatively
5 interposed between the main section bar itself and the continuous support element. More specifically, such axial locking means can comprise conventional locking organs for instance of the threaded kind or a slot, for instance with dovetail undercut, destined to receive a corresponding portion integral to the main section bar. Note that in the embodiment shown the finish
10 coating 3, once rigidly associated to the main section bar 2, will present a portion destined to be inserted in the axial locking slot obtained on the continuous support element to lock it in the axial sense. With reference now to the particular structure of the attachment means 6, it should be noted that the continuous support element 7 presents a pre-set number of attachment
15 seats 11 (in particular more than one seat and in general in a number equal to that of the projections) positioned at a pre-set mutual distance. The seats 11 are distanced correspondingly to the distance between the fastening projections 9 presented by the motor vehicle body and are provided with means for axially locking the head of the projections 9.

20 In a first embodiment shown in Figures 1 through 6, each seat 11 is a through seat and it is delimited, at least in one side of the continuous element 7 destined to face the body, by a peripheral lip defining a closed line. Such peripheral lip defines at least an area of insertion 11a so conformed as to

allow the passage of the head of the projections 9 traversing the continuous element 7. The lip also defines a second blocking area 11b of such dimensions as to allow the passage of only the stem of the rivet 9, preventing the head of the rivet from axially crossing through, moving away from or towards the body.

Once the head of the rivet 9 has been inserted in the insertion area 11a according to a direction that in the figures shown is axial (but which may coincide with any other direction), the rivet is moved in the blocking area of the seat wherein the moulding element is prevented at least from moving in axial direction away from the body.

In correspondence with the blocking area the peripheral lip presents a projecting portion 15 which defines at least an undercut 16 set to act in opposition with the corresponding arresting portion of the head of the projection 9 to prevent the aforementioned displacements.

From a procedural point of view, coupling to the motor vehicle occurs by simultaneously inserting all the heads of the fastening projections 9 through the first zone 11a of the engagement seats 11 and then effecting a translation of the moulding element according to a direction parallel to the axis of longitudinal development 17 of the section bar, thus bringing the heads to interfere with the continuous support element 7 in correspondence with the second area 11b of the seats.

In this situation any force directed to separate the moulding element from the wall of the vehicle brings the bearing portion of the head to interfere with the

undercut 16 of the seat thereby preventing detachment.

A second embodiment, shown in Figures 7 and 8, provides for the presence on the continuous support body 7 of seats 11 delimited by an open profile so as to be connected to the preceding seat and to the subsequent seat (excluding
5 respectively the first and the last seat).

Also in this configuration the seats are provided with two areas, one 11a destined to the insertion of the head of the rivet and one 11b destined to interdict the separation movement of the moulding element from the body. The blocking area 11b is also provided with undercuts 16 acting in opposition
10 against the head of the rivet 9 once the parts have been assembled.

The assembly and operation of this second type of continuous element conforms absolutely to the one described above.

It should be noted that the need to realise different types of elements can be linked for instance to the fact that sometimes the projections of the motor
15 vehicle are covered by means of coating clips 18 (see in particular Figure 8) which increase and modify the dimensions and geometry of the attachments thereby forcing the use of seats of different kinds. Obviously, by appropriately varying the dimensions, also the first type of continuous elements can be adapted for use even in case of employment of clips for coating the rivets.

20 Lastly, from the point of view of the materials, it should be noted that the continuous support element 7 can be realised, for instance by means of moulding or by means of extrusion and subsequent removal of material, with:
- polyoxymethylene;

- acetal resins;
- reinforced polyamides;
- thermoplastic or heat-hardening materials possibly reinforced with fibres of various nature, suitable for the purposes;
- 5 - metal alloys.

In turn, the main section bar 2 and the coating 3 can be realised respectively of extruded PVC compounds with metal core or fibres, or any other thermoplastic or heat-hardening material or cured rubbers suitable for the purpose, reinforced with fibres or metal cores or not so reinforced, as well as
10 for instance soft PVC compounds the better to absorb any impacts, or any other thermoplastic or heat-hardening material or cured rubber suitable for the purpose.

The realisation of a moulding element according to the invention entails a phase wherein a "C" shaped section bar 2, possibly incorporating a
15 reinforcement core, is extruded.

To the section bar 2 can be associated by means of injection moulding, or even in co-extrusion process, a finish coating 3 and/or a flexible sealing lip 4. Also prepared is a continuous support element 7 (by means of forming, by means of extrusion and subsequent milling, or by yet another technique)
20 provided with attachment seats 11 which is engaged to the main section bar by insertion into the cavity of the section bar until reaching the desired axial position.

Lastly through the use of the axial locking means 14 described the relative

sliding movements of the components comprising the moulding elements are interdicted.

At this point in the procedure, the product according to the invention is ready to be fastened to the body.

5 The invention attains important advantages.

In the first place, it should be noted that the moulding element according to the present invention substantially solves all the typical drawbacks of prior art realisations whilst assuring effective fastening, high operative reliability as well as reduced costs both to manufacture and to assemble the various
10 elements comprising it.

In particular, it should be noted that all the milling and/or blanking operations necessary for correctly fastening the attachment means 6 to the main section bar are substantially eliminated.

Moreover, thanks to the particular conformation of the continuous element 7
15 provided with a plurality of engagement seat, with a single operation it is possible to position such seats in correspondence with all the projections of the body with considerable savings in terms of assembly time.

In addition to its economising in construction and assembly times, the subject moulding element 1 is extremely effective also because the absence of
20 material removal operations substantially eliminates structural weakening problems and, above all, it excludes the possibility that permanent deformations or undulations be induced on the substantially finished piece.

Moreover, the particular structure of the various components allows to pre-

assemble the moulding element prior to fastening it to the body, so that it can be delivered to manufacturing companies already finished and ready for application.

5 In conclusion, therefore, the moulding element according to the invention is obtainable at reduced costs, though it reaches a level of quality both in terms of compliance with geometric tolerances and in terms of mechanical resistance that is difficult to reach with prior art systems without prohibitive costs.

Claims

1. Moulding element for motor vehicle bodies comprising:
- a main section bar (2) of elongated conformation;
 - 5 - attachment means (6) operatively associated to the main section bar (2) and destined to engage a corresponding securing area (5a) of a body (5) of a motor vehicle provided with fastening projections (9), said attachment means (6) comprising a support element (7) engaged to the main section bar (2), characterised in that the support element (7) is a continuous element and it
 - 10 presents a pre-set number of attachment seats (11) located at a pre-set mutual distance.
2. Moulding element according to claim 2, characterised in that said continuous support element (7) is inserted in a corresponding longitudinal seat
- 15 (8) obtained on the main section bar (2).
3. Moulding element according to claim 2, characterised in that said longitudinal seat (8) presents, in cross section, a longitudinal opening (10) to allow an access to the attachment seats (11) of the continuous element (7),
- 20 and at least an undercut (12), set to act in opposition on a corresponding bearing portion (13) of the continuous support element (7) to prevent the extraction of the attachment means (6) through said longitudinal opening.

4. Moulding element according to claim 2, characterised in that said longitudinal seat (8) presents, in correspondence with at least one end, an insertion opening (8a) to receive said continuous support element.

5 5. Moulding element according to claim 1, characterised in that it comprises axial locking means (14) operatively interposed between said main section bar (2) and said attachment means (6).

10 6. Moulding element according to claim 1, characterised in that it comprises a finish coating (3) associated to an outer side (2a) of the main section bar.

7. Moulding element according to claim 6, characterised in that said finish coating (3) is associated to the main section bar by means of injection moulding.

15 8. Moulding element according to claim 1, characterised in that it comprises a flexible seal lip (4) extending longitudinally along substantially the entire development of the moulding element itself and presenting a base portion (4a) engaged on the main section bar.

20

9. Moulding element according to claim 1, characterised in that said main section bar comprises a stiffening metal core.

10. Moulding element according to claim 3, characterised in that the main section bar (2) present a substantially "C" shaped cross section defining within its own interior the longitudinal seat (8), said seat comprising two undercuts (12), set to act in opposition on corresponding bearing portions (13) of the continuous support element (7) to prevent the extraction of the attachment means (6) through the longitudinal opening.

11. Moulding element according to any one of the previous claims, characterised in that the continuous support element (7) presents a pre-set number of attachment seats (11) delimited at least in one side of the continuous element (7) destined to face the body, by a peripheral lip defining a closed line.

12. Moulding element according to claim 11, characterised in that the peripheral lip delimiting the attachment seat (11) defines at least an area (11a) for the insertion of fastening projections (9) and at least an area (11b) for blocking the fastening projections (9) in an axial direction of motion of the moulding element away from the body.

13. Moulding element according to any one of the previous claims, characterised in that the fastening projections (9) of the body comprise a head and a connecting stem between the head and the body, said head presenting a radial dimension greater than the radial dimension of the stem.

14. Moulding element according to claims 12 and 13 characterised in that, in correspondence with the blocking area (11b), the peripheral lip presents a projecting portion (15) defining at least an undercut (16) set to act in opposition on a corresponding arrest portion of the head of the projection (9) to prevent separating motions between the moulding element (1) and the body (5) of the vehicle.

15. Moulding element according to any one of the claims from 1 to 10, characterised in that the continuous support element (7) presents a pre-set number of attachment seats (11) each delimited at least in one side of the continuous element (7) destined to face the body, by a peripheral lip defining an open line connected to the subsequent and to the preceding seat.

16. Moulding element according to claim 15, characterised in that the peripheral lip delimiting the attachment seat (11) defines at least an area (11a) for the insertion of the fastening projections (9) and at least an area (11b) for blocking the fastening projections (9) in an axial direction of motion of the moulding element away from the body.

17. Moulding element according to claim 15, characterised in that the fastening projections (9) of the body comprise a head and a stem connecting the head and the body, said head presenting a radial dimension greater than the radial dimension of the stem.

18. Moulding element according to claims 16 and 17 characterised in that, in correspondence with the blocking area (11b), the peripheral lip presents a projecting portion (15) defining at least an undercut (16) set to act in opposition on a corresponding arresting portion of the head of the projection (9) to prevent separating motions between the moulding element (1) and the body (5) of the vehicle.

19. Method for the realisation of a moulding element for motor vehicle body, preferably according to claim 1, comprising the phase of realising a main section bar (2) of elongated conformation, characterised in that it further comprises the phases of realising a continuous support element (7) presenting a pre-set number of attachment seats (11) positioned at a pre-set mutual distance and engaging the continuous support element (7) to the main section bar (2) prior to associating the moulding element (1) to the body (5) of a motor vehicle.

20. Method according to claim 16 characterised in that it comprises an axial fastening phase between main section bar and continuous support element prior to associating the moulding element to the body of a motor vehicle.

21. Method according to claim 16 characterised in that it further comprises the phase of associating to an outer side (2a) of the main section bar (2) a finish coating (3) by means of injection moulding.

THIS PAGE BLANK (USPTO)

FIG.1

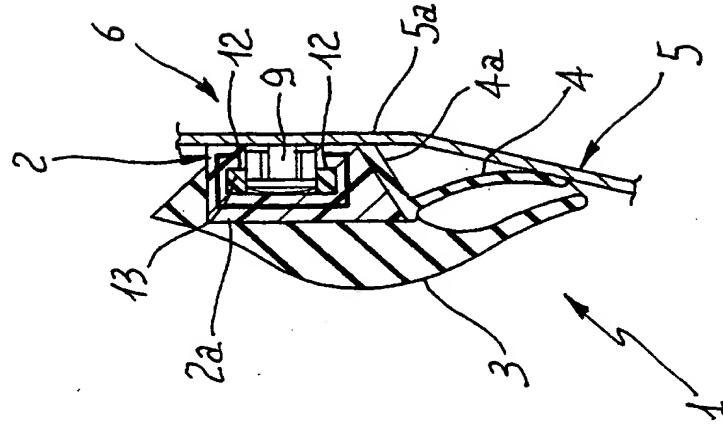
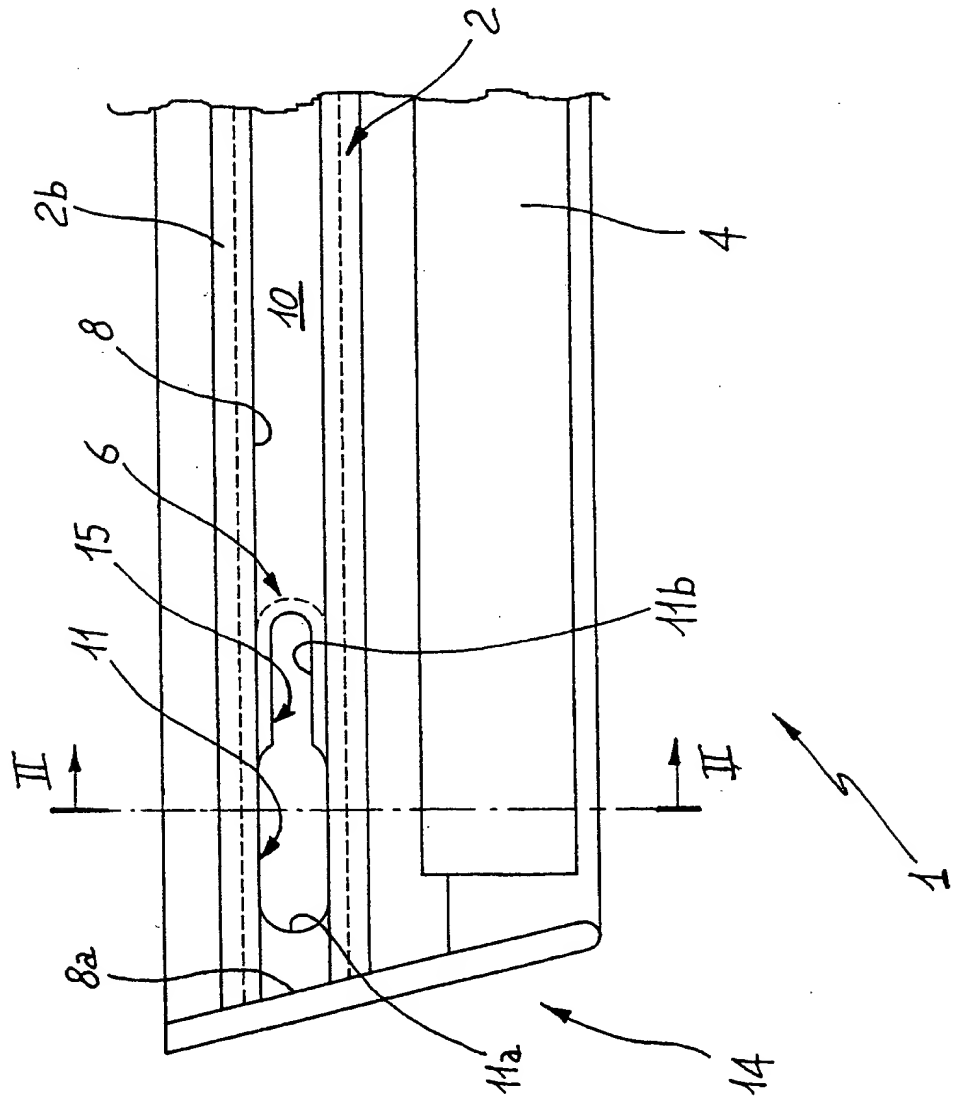


FIG. 2

531 Rec'd PCT/F 19 JUN 2001

THIS PAGE BLANK (USPTO)

FIG. 5

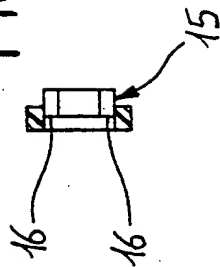


FIG. 6

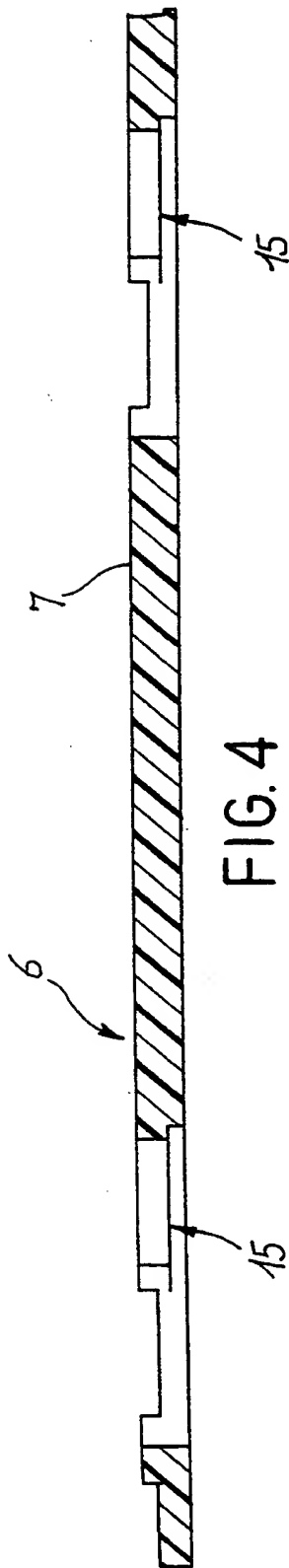
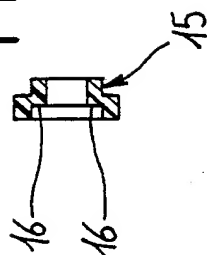


FIG. 4

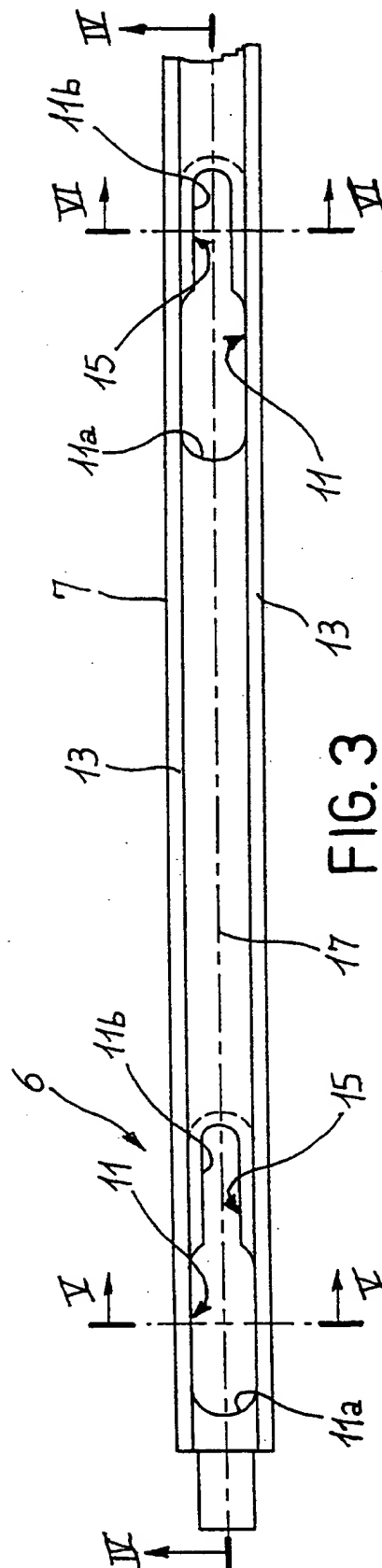


FIG. 3

531 Rec'd PCT/PT 2 JUN 2001

THIS PAGE BLANK (USPTO)

FIG. 7

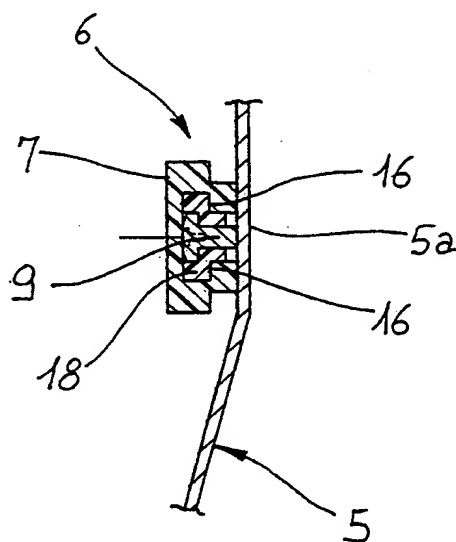
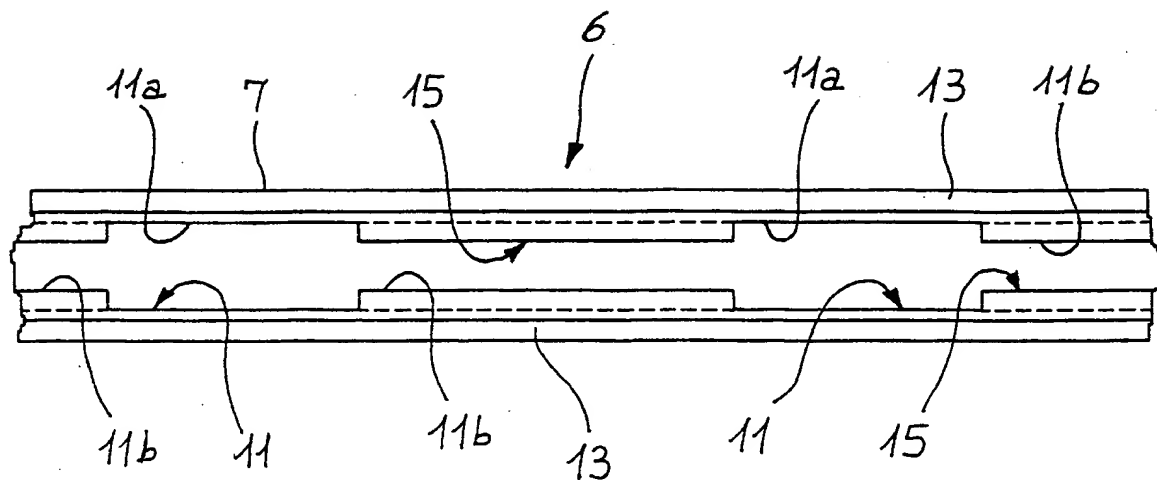


FIG. 8

531 Rec'd PCT/PTT 19 JUN 2001

THIS PAGE BLANK (USPTO)